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(11)

EP 1 063 360 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
27.12.2000 Bulletin 2000/52

(51) Int Cl.7: **E03D 9/052**

(21) Application number: **99830409.1**

(22) Date of filing: **25.06.1999**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

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(54) **A device for preventing bad smells and exhalations from being spread during the use of a water-closet**

(57) A device for preventing bad smells and exhalations from being spread during the use of a water-closet, comprising air-exhausting means located directly near the upper opening of the lavatory pan (10) so as to prevent the evil-smelling exhalations from being spread into the restroom.

Said means consists of several intake openings (11,12) located at the upper edge of the opening of the lavatory pan and having their outlets above the holes for the water flushing so as to intake air from the inside of the pan and are connected to one or more pipes (13) running inside the upper edge of the toilet bowl up to the rear portion thereof where they are connected to an air-exhauster communicating with the outside.

Alternatively, said intake openings are provided in the lavatory seat or in a collar to be fitted by pressure or laid on the upper edge of the lavatory pan.

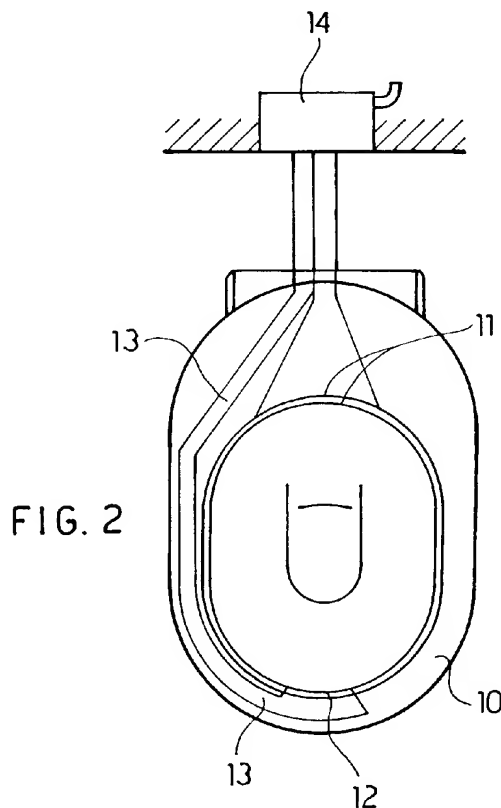


FIG. 2

EP 1 063 360 A1

Description

[0001] The present invention relates to sanitary fixtures and more particularly a device capable of preventing partially or totally bad smells and exhalations from being spread during the use of the water-closet.

It is well known that such bad smells are particularly nauseating especially for those having the need of using the lavatory straight after someone else.

[0002] Air-exhausters that suck air up inside the lavatories and feed it outside the same are already known. A drawback of such systems for exhausting bad smells is due to the fact that bad smells remain in the restroom for a time which is certainly shorter than that necessary for the natural aeration of such room, however, longer than the typical time of use of a lavatory. As a result, either the next user still smells evil-smelling air or there should be no admittance for the next user until the room is fully aerated, even if it is free. In the latter case, the disposability of the lavatory is strongly reduced.

[0003] The object of the invention is to overcome the problems of the known air-exhausting devices by providing a device capable of suppressing or strongly reducing such particularly nauseating exhalations as soon as they give off.

[0004] According to the invention the device includes air-exhausting means located directly near the upper opening of the lavatory pan so as to prevent the evil-smelling exhalations from being spread into the restroom.

[0005] A better understanding of the invention will result from the following detailed description with reference to the accompanying drawings that show some preferred embodiments thereof only by way of a not limiting example.

[0006] In the drawings:

Figs. 1 and 2 show a longitudinal section and a top plan view of a first embodiment of the invention, respectively;

Fig. 3 shows a section of a detail of a second embodiment;

Fig. 4 shows a third embodiment of the invention.

[0007] As already mentioned above, according to the invention there is provided a device including several intake openings located at the upper edge of the opening of the lavatory pan.

According to a first embodiment with particular reference to Figs. 1 and 2, the device provides a lavatory pan 10 including intake openings capable of aspirating air from the inside of the pan and having their outlets above the holes for the water flushing. In the preferred embodiment of Figs. 1 and 2, such intake openings are in a number of two: one 11 at the rear side and the second 12 at the front side. Openings 11 and 12 are connected

to one or more pipes 13 running inside the upper edge of the toilet bowl up to the rear portion thereof where they are connected to an air-exhauster 14 communicating with the outside. Even if such a solution exhausts the bad smells, it requires, of course, the replacement of the lavatory pan with another one provided with the intake openings described above.

It is evident that the arrangement and the number of the openings may change at will without any problem with the sole limitation of ensuring an intake flow enough to prevent bad smells from spreading from the inside of the lavatory pan to the restroom.

In order to avoid the replacement of the lavatory pan, a second embodiment (Fig. 3) of the present invention provides essentially a particular cover 15 of the lavatory pan the seat 16 of which is provided with channels 17 and intake openings similar to those already described and connected as above.

Advantageously, such second embodiment allows a typical lavatory pan to be used just by replacing cover and seat and connecting the air channels to a suitable air-exhauster communicating with the outside. A third embodiment shown in Fig. 4 allows a typical lavatory pan to be used by providing a "collar" 18 to be fitted by pressure or laid on the upper edge of the lavatory pan.

As can be seen in Fig. 4, such collar fits with the shape of the upper edge of the lavatory pan causing its slight raising. It is self-evident that such a collar 18 is provided with inside channels connected to a plurality of intake openings along the inside periphery of the collar. Such channels are connected at the rear side to an air-exhauster that lets the nauseating air outside the restroom. The exhausting pipes connecting the channels to the air-exhauster preferably of the electrical type can be passed through the holes normally provided at the rear side of the lavatory pan.

The air-exhauster can start operating preferably whenever the lavatory pan is used, for example by a photoelectric cell or a pressure switch, and carry on its operation as long as the restroom is used and over for a predetermined time interval controlled by a timer.

The present invention has been described and illustrated according to some preferred embodiments thereof, however, it should be understood that those skilled in the art can make equivalent modifications and/or replacements without departing from the scope of the present industrial invention.

Claims

1. A device for preventing bad smells and exhalations from being spread during the use of a water-closet, characterized in that there is provided air-exhausting means located directly near the upper opening of the lavatory pan so as to prevent the evil-smelling exhalations from being spread into the restroom.

2. The device of claim 1, characterized in that said means consists of several intake openings located at the upper edge of the opening of the lavatory pan.
3. The device of the preceding claims, characterized in that said intake openings have their outlets above the holes for the water flushing so as to intake air from the inside of the pan and are connected to one or more pipes running inside the upper edge of the toilet bowl up to the rear portion thereof where they are connected to an air-exhauster communicating with the outside.
4. The device of claims 1 and 2, characterized in that said intake openings are provided in the lavatory seat which is in turn provided with inside channels connected to a suitable air-exhauster communicating with the outside.
5. The device of claims 1 and 2, characterized in that said intake openings are provided in a collar to be fitted by pressure or laid on the upper edge of the lavatory pan, said collar fitting with the shape of the upper edge of the lavatory pan.
6. The device of claim 5, characterized in that said intake openings are connected inside said collar to channels connected in turn at the rear side to an air-exhauster that lets the nauseating air outside the restroom.
7. The device of the preceding claims, characterized in that the exhausting pipes connecting the channels to the air-exhauster can be passed through the holes normally provided at the rear side of the lavatory pan.

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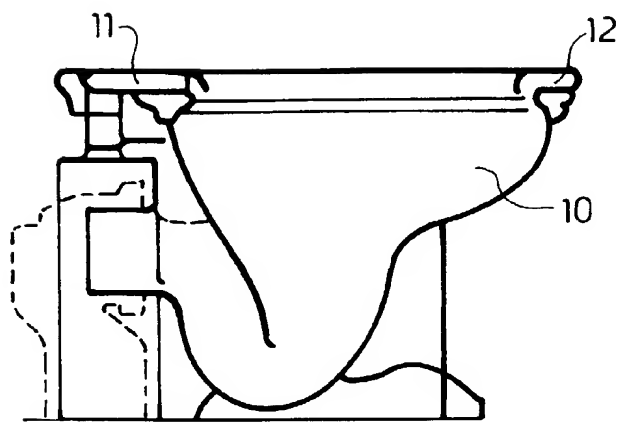


FIG. 1

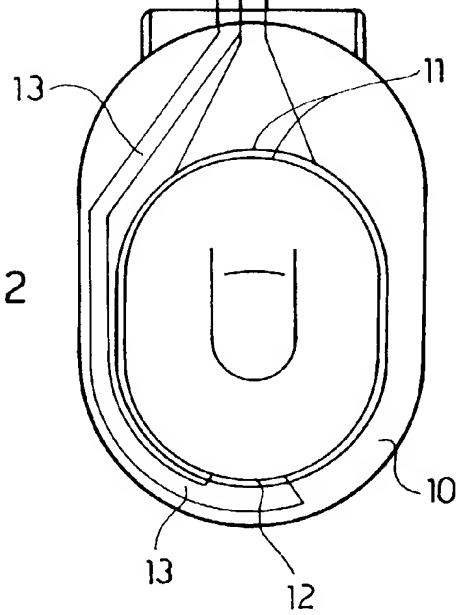
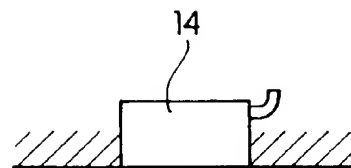


FIG. 2

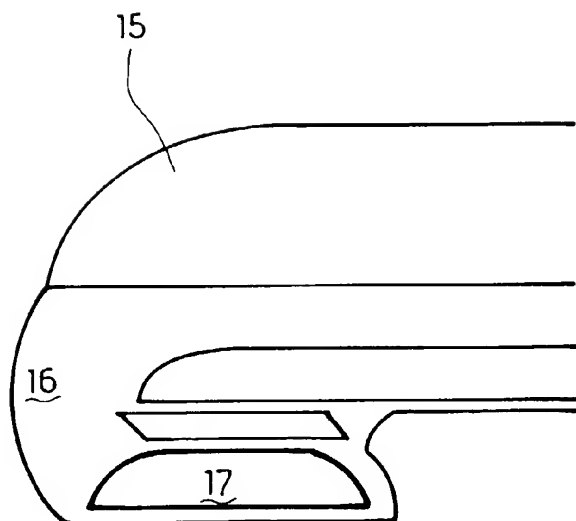


FIG. 3

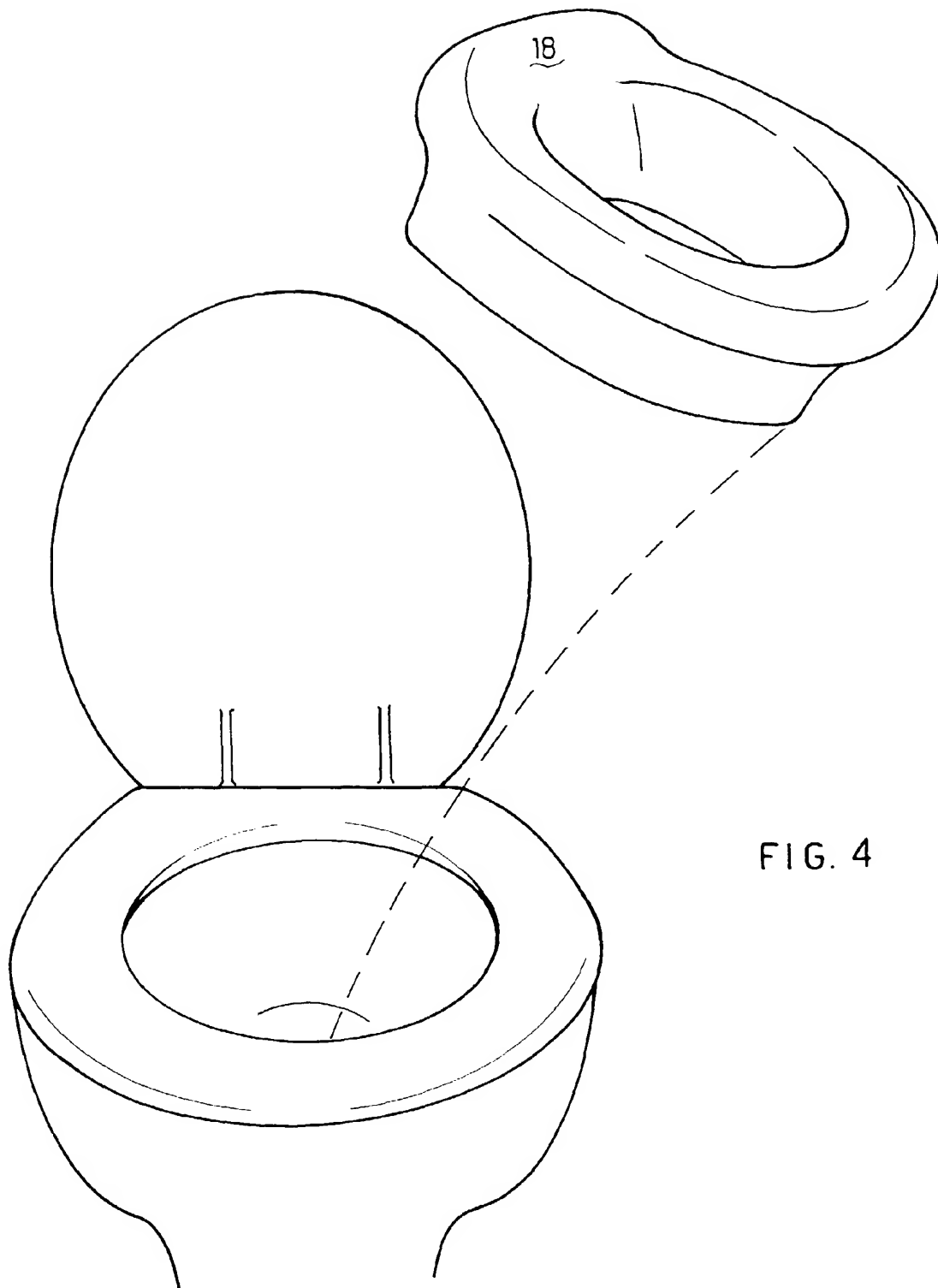


FIG. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0409

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 October 1999	Examiner De Coene, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P/04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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